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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BERNSHTEYN, MICHAEL	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
09/04/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/529,180	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	MICHAEL M. BERNSHTEYN	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-13* is/are rejected.

7)☒ Claim(s) *5* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action follows a response filed on June 2, 2009. Claims 1-4 have been cancelled; claims 5-13 have been added; no claims have been amended.

2. In view of amendments and remarks, the rejection of claim 4 under 35 U.S.C. 112, 2nd paragraph, and the rejections of claims 1-4 under 35 U.S.C. 102 (b) and 103(a) have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of below mentioned references.

3. Claims 5-13 are pending.

Claim Objections

4. Claim 5 is objected to because of the following informalities: claim 5, line 2 recites the limitation "components (A) and (D)" instead of "components (A) through (D)". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites 30 to 70 wt% of a urethane (meth)acrylate; 40 to 60 wt% of an ethylenically unsaturated monomer, and 0.1 to 5 wt% of – γ-

mercaptopropyltrimethoxysilane. Therefore, if the amounts are accordingly of the urethane (meth)acrylate – 70 wt%, of the ethylenically unsaturated monomer – 40 wt%, of γ-mercaptopropyltrimethoxysilane – 0.1%, the total amount is 110.1%, which render the claim indefinite.

Claim Rejections - 35 USC § 102

6. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action

Claim Rejections - 35 USC § 103

7. The text of this section of Title 35 U.S.C. not included in this action can be found in a prior Office Action.

8. Claims 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Chawla et al. (U. S. Patent 5,496,870).

With regard to the limitations of claim 5, Chawla discloses **a curable liquid resin composition** comprising a **urethane (meth)acrylate** polymer and at least one (meth)acrylate compound containing **a hydroxyl group** and coated articles produced therefrom (abstract). The number average molecular weight of the urethane (meth)acrylate polymer contained in the composition is usually in the 700 to 20,000 range, which is partly within the claimed range (col. 5, lines 24-26).

Chawla exemplifies that the usage of the urethane (meth)acrylate compounds (which correspond to the claimed component (A)) is within the claimed range (Examples 6-9, col. 10, line 25 through col. 8, line 3).

Chawla discloses that the usage of the (meth)acrylate compounds (which correspond to the claimed component (B)) is in the range of from 5 to 60% of the composition, which partly overlaps the claimed range for component (B) (col. 7, lines 23-26).

Urethane (meth)acrylate polymers are prepared by reacting the above-mentioned polyol compound (A), **the polyisocyanate** compound (B), and the (meth)acrylate compound containing a hydroxyl group (C). Specifically, this is carried out by reacting the isocyanate group of the isocyanate compound (B) with the hydroxyl group of the polyol compound (A) and with the hydroxyl group of the (meth)acrylate compound containing a hydroxyl group (C) respectively (col. 4, lines 47-54). The usage of **propylene glyco**l is clearly exemplified (Comparative Example 1, col. 11, line 20; col. 3, lines 27, 37, 54).

With regard to the limitations of claim 5 concerning a glass transition point, Chawla is silent about it. However, in view of substantially identical ethylenically unsaturated monomers in the form of a homopolymer used by Chawla and instantly claimed as component (B), it is the examiner position to believe that Chawla's component (B) possesses this property. Since the USPTO does not have equipment to do the analytical test, the burden is now shifted to the applicant to prove otherwise. ***In re Fitzgerald*** 619 F 2d 67, 70, 205 USPQ 594, 596 (CCPA 1980).

Chawla discloses that examples of silane coupling agents which can be given are γ-aminopropyltriethoxysilane, **γ-mercaptopropyltrimethoxysilane**, γ-methacryloxypropyltrimethoxysilane, etc. (col. 8, lines 39-42). The usage of the silane coupling agents is within the claimed range (Example 6, col. 10, lines 33-34).

With regard to the limitations of claim 6, Chawla discloses that examples of the polyisocyanate compound (B) include 2,4-tolylenediisocyanate, 2,6-tolylenediisocyanate, 1,3-xylylenediisocyanate, 1,4-xylylenediisocyanate, 1,5-naphthalenediisocyanate, m-phenylenediisocyanate, p-phenylenediisocyanate, 3,3'-dimethyl-4,4'-diphenylmethanediisocyanate, 3,3'-dimethylphenylenediiso 4,4'-biphenylenediisocyanate, 1,6-hexane-diisocyanate, bis(2-isocyanateethyl)-fumarate, 6-isopropyl-1,3-phenyldiisocyanate, 2,2-bis-4'-propaneisocyanate, lysinediisocyanate, and the like (col. 4, lines 10-21).

With regard to the limitations of claim 7, Chawla discloses that examples of the (meth)acrylate compound containing a hydroxyl group which is the monomer component (C) are 2-hydroxyethyl(meth)acrylate, 2-hydroxypropyl(meth)acrylate, 2-hydroxybutyl(meth)acrylate, 2-hydroxy-3-phenyloxypropyl(meth)acrylate, 1,4-butanediolmono(meth)acrylate, 2-hydroxyalkyl(meth)acryloyl phosphate, 4-hydroxycyclohexyl(meth)acrylate, 1,6-hexanediolmono(meth)acrylate, neopentylglycolmono(meth)acrylate, trimethylolpropanedi(meth)acrylate, trimethylolethanedi(meth)acrylate, pentaerythritoltri(meth)acrylate, dipentaerythritolpenta(meth)acrylate, etc. (col. 6, lines 22-38).

With regard to the limitations of claim 8, Chawla discloses that monofunctional compounds and polyfunctional compounds can be used as reaction dilution agents. Examples of monofunctional compounds which can be given include **isopropyl(meth)acrylate**, butyl(meth)acrylate, amyl(meth)acrylate, isobutyl(meth)acrylate, t-butyl(meth)acrylate, pentyl(meth)acrylate, isoamyl(meth)acrylate, hexyl(meth)acrylate, heptyl(meth)acrylate, octyl(meth)acrylate, isooctyl(meth)acrylate, **2-ethylhexyl(meth)acrylate**, nonyl(meth)acrylate, decyl(meth)acrylate, isodecyl(meth)acrylate, undecyl(meth)acrylate, **dodecyl(meth)acrylate, lauryl(meth)acrylate**, octadecyl(meth)acrylate, stearyl(meth)acrylate, tetrahydrofurfuryl(meth)acrylate, butoxyethyl(meth)acrylate, ethoxydiethylene glycol (meth)acrylate, **benzyl(meth)acrylate**, cyclohexyl(meth)acrylate, etc. (col. 5, line 39 through col. 6, line 37).

With regard to the limitations of claim 9, Chawla discloses that monofunctional compounds and polyfunctional compounds can be used as reaction dilution agents. Examples of monofunctional compounds which can be given include **N-vinylpyrrolidone**, **N-vinylcaprolactam**, N,N-**dimethyl(meth)acrylamide**, etc. (col. 5, lines 39-66).

9. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable as obvious over Chawla et al. (U. S. Patent 5,496,870) as applied to claims 5-9 above and further in view of Pinault et al. (U. S. Patent Application Publication 2002/0160151).

The disclosure of Chawla's reference resided in § 8 is incorporated herein by reference.

With regard to the limitations of claims 10-13, Chawla discloses a curable liquid resin composition which has superior curing characteristics, durability, resistance to heat aging and ultraviolet light and the like, adheres well to various types of substrates, and is therefore useful as a coating material for plastics, wood, porcelain, glass, paper, and the like, and as an optical molding material, three-dimensional molding material, printing plate material, and the like (col. 1, lines 9-17).

With regard to the limitations of claims 10-13, Chawla does not disclose a method of adhesively bonding PET film and a method of adhesively bonding a MS plate and a PET film using radiation.

With regard to the limitations of claims 10-13, Pinault discloses a process for preparing the integrated granule product wherein a plurality of ceramic coated granules are bonded to a film through the use of a curable adhesive. In a preferred embodiment, the adhesive is first applied onto the film with the ceramic coated granules then applied onto the adhesive. The adhesive is then subjected to a form of energy, such as ultraviolet radiation, thermal radiation, actinic radiation, ionizing radiation, moisture activation, photo-activation, or combinations thereof, to affect curing, chain extension, or both. Additionally, the integrated granule product may be further processed by bonding the integrated granule product to a substrate to form such articles as roofing shingles and flooring materials ([0011]). Those skilled in the art are capable of selecting a specific adhesive to match film characteristics. Examples of suitable materials include **acrylated urethanes**, multifunctional acrylate monomers, acrylated epoxies, etc. ([0027]). The film must be capable of bonding to various substrates for end use

applications. Conventional films capable of performing the noted functions are suitable for use with the present liquid curable resin compositions. Examples of film materials include paper, natural or synthetic fabrics, polymeric materials such as polyethylene terephthalate (PET), polypropylene, polyamide, polyimide or lofty fibrous mats. Preferred materials would include polymeric materials, most preferably **polyethylene terephthalate (PET)** and polypropylene ([0022]).

Both references are analogous art because they are from the same field of endeavor concerning liquid curable resin compositions based on urethane (meth)acrylates.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ Chawla's liquid curable resin composition in the method of adhesively bonding PET film and a method of adhesively bonding a MS plate and a PET film using radiation as taught by Pinault in order to provide a roofing product that is capable of withstanding severe weather conditions and capable of preventing the degradation of the underlying asphalt-based substrate. It would also be an advantage to provide a roofing product that prevents the discoloration of granules when applied onto an asphalt-based substrate (US'151, page 1, [0006]), and thus to arrive at the subject matter of instant claims 10-13.

10. Claims 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamura et al. (U. S. Patent 6,191,187).

With regard to the limitations of claim 5, Yamamura discloses a liquid curable composition comprising: (A) a urethane (meth)acrylate polymer; (B) a (meth)acrylate

compound; (C) a reaction diluent, and (D) a polymerization initiator. The composition has superior storage stability over a long period of time and, at a cured state, exhibits excellent UV resistance, heat resistance, yellowing resistance, and oil resistance (abstract).

The number average molecular weight of urethane (meth)acrylate polymer (A) is preferably 400-20,000, which is partly within the claimed range (col. 5, lines 56-57).

The amount of the urethane (meth)acrylate polymer (A) is especially preferably 20-80% by weight, in order to provide the composition with better coatability to optical fibers and a cured material with excellent flexibility, which is mostly within the claimed range (col. 5, lines 59-64).

Yamamura exemplifies the usage of **γ-mercaptopropyltrimethoxysilane** as a silane coupling agent (Example 1, col. 9, line 65 through col. 10, line 12; col. 9, line 9), wherein the amount is 0.7 part which is within the claimed range.

With regard to the limitations of claim 5 concerning a glass transition point, Yamamura is silent about it. However, in view of substantially identical ethylenically unsaturated monomers in the form of a homopolymer used by Yamamura and instantly claimed component (B), it is the examiner position that Yamamura's component (B) possesses this property. Since the USPTO does not have equipment to do the analytical test, the burden is now shifted to the applicant to prove otherwise. ***In re Fitzgerald*** 619 F 2d 67, 70, 205 USPQ 594, 596 (CCPA 1980).

With regard to the limitations of claim 5 concerning the us age of polypropylene glycol in the preparation of the urethane (meth)acrylate, Yamamura clearly discloses

that the urethane (meth)acrylate polymer (A) used in the present invention can be prepared, for example, by the condensation reaction of a polyol compound (a), a polyisocyanate compound (b), and a (meth)acrylate compound having a hydroxy group (c), and examples of the polyol compound (a) are polyethylene glycol, **polypropylene glycol**, polytetramethylene glycol, etc. (col. 2, lines 38-43; col. 3, line 26).

With regard to the limitations of claim 6, Yamamura discloses that the polyisocyanate (b) used for the reaction includes, 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, 1,3-xylylene diisocyanate, 1,4-xylylene diisocyanate, hydrogenated xylylene diisocyanate, 1,5-naphthalene diisocyanate, m-phenylen diisocyanate, p-phenylene diisocyanate, 3,3'-dimethyl-4,4'-diphenylmethane diisocyanate, 4,4'-diphenylmethane diisocyanate, etc. (col. 4, lines 30-52).

With regard to the limitations of claim 7, Yamamura discloses that the examples of the (meth)acrylate compound with a hydroxy group used for the reaction are 2-hydroxyethyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, 2-hydroxybutyl (meth)acrylate, 2-hydroxy-3-phenoxypropyl (meth)acrylate, 1,4-butanediol mono(meth)acrylate, 2-hydroxyalkyl (meth)acryloyl phosphate, 4-hydroxycyclohexyl (meth)acrylate, 1,6-hexanediol mono(meth)acrylate, etc. Among these (meth)acrylate compounds having hydroxy group, 2-hydroxyethyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, and the like are especially preferred. These (meth)acrylate compounds having a hydroxy group (c) can be used either alone or in admixture of two ore more of them (col. 4, line 56 through col. 5, line 17).

With regard to the limitations of claim 8, Yamamura discloses that the examples of monofunctional compounds are 2-hydroxyethyl (meth)acrylate, 2-hydroxypropyl (meth)acrylate, 2-hydroxybutyl (meth)acrylate, methyl (meth)acrylate, ethyl (meth)acrylate, propyl (meth)acrylate, isopropyl (meth)acrylate, butyl (meth)acrylate, amyl (meth)acrylate, isobutyl (meth)acrylate, t-butyl (meth)acrylate, pentyl (meth)acrylate, isoamyl (meth)acrylate, hexyl (meth)acrylate, heptyl (meth)acrylate, octyl (meth)acrylate, isooctyl (meth)acrylate, 2-ethylhexyl (meth)acrylate, nonyl (meth)acrylate, decyl (meth)acrylate, isodecyl (meth)acrylate, undecyl (meth)acrylate, dodecyl (meth)acrylate, lauryl (meth)acrylate, etc. (col. 6, line 40 through col. 7, line 24).

With regard to the limitations of claim 9, Yamamura discloses N-vinylpyrrolidone, N-vinylcaprolactam, (meth)acryloyl morpholine, dimethylaminoethyl (meth)acrylate, etc. (col. 6, lines 62-64).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL M. BERNSHTEYN whose telephone number is (571)272-2411. The examiner can normally be reached on M-Th 8-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael M. Bernshteyn/
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